



UK Research  
and Innovation

RT2 01

## UK Research and Innovation – High-level Sector Round Tables

### ROUND TABLE 2

## Valuing and Measuring Natural Assets for Land Management

Wednesday 21 November 2018, 10:30-14:30  
(refreshments available from 10:00)

[Prince Philip House](#), 3 Carlton House Terrace, St. James's, London SW1Y 5DG

## BACKGROUND PAPER

This paper outlines the objectives, the expected output and longer-term outcomes of the Round Table.

It then provides brief context for the Round Table, including relevance of measuring and valuing nature for the land management sector, drivers for measuring and valuing nature in the sector, and some examples of current activity.

For a brief introduction from the Natural Environment Research Council (NERC) to existing research and innovation output relating to measuring and valuing nature, see separate paper RT2 02.

For examples of existing funding (mainly NERC) which supports business-academic collaboration, see separate paper RT2 03.

**Guy Duke**

Business Champion, Valuing Nature Programme Coordination Team

**Peter Young**

Chair, Valuing Nature Programme Business Interest Group

**GD NATCAP LTD**

## 1. OBJECTIVE & EXPECTED OUTCOMES

**The objective** of this Round Table is to identify the research and innovation (R&I) needs and priorities of business and policy organizations in the land management sector, so that current and future research has enhanced utility for the sector.

**Expected outcomes** include: (a) better integration of nature in project and investment decisions related to land management; (b) knowledge needs and priorities identified by the sector influence R&I funding.

The Round Table will consider:

- **current activity to measure and value nature in the sector** (e.g. how to apply natural capital assessments, natural capital accounting), the direction of travel in this respect, and the related knowledge needs;
- **the extent to which these knowledge needs may be supported by existing output from R&I** (e.g. data, tools, methods, models) and **how uptake of this output may be accelerated** (e.g. through collaborative working between the academic, business and policy communities, filling knowledge gaps); and
- **what further R&I investment may be needed** to support the sector in measuring and valuing nature, and **what role the Natural Environment Research Council (NERC), or other funders, may have** in supporting that.

This is the second in a series of Round Tables commissioned by the NERC Innovation Team.<sup>1</sup> A first Round Table (June 2018) focused on the infrastructure sector and a third Round Table will focus on insurance / financial services (Winter 2018/19). A further Round Table is planned for Spring 2019 bringing together all these sectors to consolidate common interests.

NERC and UKRI are interested in stimulating **benefit to the UK economy from publicly funded UK environmental research**, by enabling businesses to access the latest research. The Round Tables will therefore focus on organisations with significant operations in the UK (not necessarily UK-owned), but may also consider how these organisations are integrating natural capital in their business decision-making internationally.

## 2. EXPECTED OUTPUT

The output will be a concise report containing:

- **An overview of current relevant activity in the land management sector** on the integration and application of natural capital in business decision-making, of **the future ambition of business** and policy in this respect, of **what is driving business interest** and of **enablers/barriers**.
- **An overview of knowledge needs of the land management sector** (focussing on but not limited to **environmental science**), and initial **analysis of the extent to which these needs may be met by existing output** from NERC and UKRI and of the **extent to which further R&I is required**.
- Consideration of **what role NERC Research and Innovation funding could have** in accelerating uptake of R&I output, what impact this might have on the land management sector, and what forms of funding and structures enable this.

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<sup>1</sup> Infrastructure, risk management, food systems, natural resources, environmental data... - <http://www.nerc.ac.uk/innovation/activities>

### 3. PARTICIPANTS

This Round Table brings together representatives from the land management sector, including:

- Private farming and forestry estates
- Major not-for-profit landowners
- Representative bodies/associations in the land management sector
- Food chain companies (manufacture, retail)
- Water companies with substantial landholdings and/or involved in catchment management
- Statutory bodies working with land managers
- Consulting and property advisors/agents working with landowners
- National infrastructure companies with land management interests

### 4. CONTEXT

#### 4.1 Relevance of measuring and valuing nature for the land management sector

Landowners and land managers are critical stewards of natural assets (natural capital stocks) and of the ecosystem services that flow from these.

Businesses based on land management have multiple dependencies on natural assets and multiple impacts on these natural assets. This gives rise to wide-ranging risks and opportunities.

The [UK National Ecosystem Assessment](#) found that much of the UK's natural capital was degraded and many ecosystem services in decline.

Effective management of natural assets to sustain and grow natural capital stocks and optimise ecosystem service flows, reduce and manage risks, and seize opportunities, requires good relevant knowledge, evidence, methods and tools to measure and value nature and integrate this information in business decision-making.

#### 4.2 Drivers for measuring and valuing natural assets in the sector

A number of drivers may be leading businesses in the land management sector to do more to measure and value natural assets and integrate this knowledge in decision-making. These drivers may include regulatory / policy drivers for the sector, the need for longer-term economic viability of land management (for example, in the face of deteriorating soil quality, or changing climate), financial drivers (including lender policy, shareholder pressures, insurance), asset management considerations, corporate responsibility considerations, external stakeholder pressures (e.g. civil society groups) and maintaining a licence to operate. These drivers may vary considerably in importance between different parts of the land management sector – for example, between agricultural businesses and water utilities.

Regulation and policy are likely to be a key driver. A number of recent regulatory / policy initiatives are notable in this regard. These include: (a) for the UK as a whole, the Government's [Industrial Strategy](#) and [Green Growth Strategy](#); the work of the Natural Capital Committee with the Office for National Statistics and the ONS commitment to [natural capital accounts](#); and the likely direction of post-Brexit agricultural policy, including the [draft Agriculture Bill](#); (b) for England, the [Natural Environment White Paper](#), [National Planning Policy Framework](#) (including the duty to achieve biodiversity net gain) and [25 Year Environment Plan](#); (c) for Wales, the [Wellbeing of Future Generations Act 2015](#) (notably the goal 'A Resilient Wales'); (d) for Scotland, the [Programme for Government 2017-18](#) (which includes several relevant provisions).

### **4.3 Examples of relevant activity in the sector**

While there is considerable activity across the land management sector in relation to measuring and valuing natural assets / capital, there is a long way to go before consideration of natural assets / capital (and of the services that flow from this capital) is fully taken into account in business decision-making across the sector.

The Valuing Nature Programme's series of Business Impact Schools 2017-18 have featured a number of speakers from the land management sector presenting case studies on how they are taking natural capital into account in their businesses. A small selection of these is outlined in **Annex 1** to give a feel for relevant activity across the sector.

### **4.4 Direction of travel**

Where might the sector be heading in regard to measuring and valuing natural assets and integrating this knowledge into business decision-making? Recent discussion on this at the Valuing Nature [Business Interest Group](#) suggests that the key needs may be to bring activity to scale, and to integrate the business interests across the land management, infrastructure and finance sectors (including insurance). What would be the implications of this for research and innovation? The other round tables – addressing infrastructure and the insurance / financial services sector, consider this from the perspective of these other two sectors.

## **CONVENORS**

This Round Table is convened by the [Valuing Nature Programme](#) in association with the [Natural Environment Research Council](#) (NERC).

The five year, £6.5m Valuing Nature Programme, funded by NERC, ESRC, BBSRC, AHRC and Defra, aims to better understand and represent the complexities of the natural environment in valuation analyses and decision making. It considers the economic, societal and cultural value of ecosystem services. The Programme is funding research and supporting researchers in making links with policymakers, businesses and practitioners through the Valuing Nature Network. Current funded projects focus on health and wellbeing values of nature, and on tipping points in nature.

As part of UK Research & Innovation (UKRI), NERC has a role in supporting the use of research to create value for business and policy-makers. NERC works in partnership to understand where business and policy challenges can be addressed through collaboration with environment scientists or drawing from data and knowledge in the research base. It encourages and supports collaboration between academia, business and policy and funds projects that develop innovative products and services for the future.

**ANNEX 1**  
**EXAMPLES OF RELEVANT ACTIVITY IN THE LAND MANAGEMENT SECTOR**

## **EXAMPLE 1: THE CROWN ESTATE**

### **Corporate Natural Capital Accounting – The Crown Estate**

Phil Cryle, etec

The Crown Estate's rural property portfolio is around 146,000 hectares. Within this the Windsor Estate features 6,400 hectares of parkland, woodland, and gardens and is primarily managed for public enjoyment, attracting around 3 million visitors a year. The estate includes Great Windsor Park, which is nationally and internationally renowned for its biodiversity. Large areas are designated as Sites of Special Scientific Interest (SSSI). The park is particularly noted for its rare beetles and flies, with over 2,000 species of beetle being recorded in recent years, some of which are unknown elsewhere in the British Isles. These, along with several species of hole-nesting birds, depend on the veteran oak and beech trees found in the park. Some ancient oak pollards date as far back as 800 years.

During 2014 The Crown Estate supported the work of the Natural Capital Committee, contributing to the development of a framework for corporate natural capital accounting (CNCA)<sup>2</sup>. The Windsor Estate was one of four case studies that piloted the framework, examining the long-term benefits associated with the sustainable management of the estate, which is recognised to be of a high environmental and cultural value.

#### **Business challenge/need**

The Windsor Estate is a microcosm of the wider challenge faced by The Crown Estate in measuring and reporting the contribution it makes to the UK. In particular, it is challenging to demonstrate that the total value generated by the estate is much greater than reflected in the revenue generated for public finances. There is, however, no means to show this environmental and cultural value through conventional financial accounting. Indeed financial reporting reflects the management costs, along with the liability (in the balance sheet) of the obligation to maintain the estate. The management costs are partially offset by income from the estate (including income agriculture and visitors), but the annual upkeep is dependent on cross-subsidy from income generated by The Crown Estate's wider property portfolio.

To address this challenge, The Crown Estate has developed an integrated reporting approach to measure and communicate its environmental, social and economic impact. This focuses on identifying how material issues are managed - such as economic impact (gross value added), greenhouse gas emissions, waste, etc. - and the added value this generates for the business and society<sup>3</sup>. The CNCA pilot provided an opportunity to contribute to this integrated reporting by adding to the understanding and measurement of the benefits provided by the (natural capital of) Windsor Estate.

#### **Business response**

The CNCA framework uses a balance sheet format to report the value of natural capital (assets) and the costs (liabilities) of their maintenance. Asset values include both private revenues accruing to The Crown Estate and the external value derived by the rest of the society. Unlike a conventional financial balance sheet, the framework is forward-looking as the purpose is to understand how much a business needs to invest in their natural

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<sup>2</sup> etec et al. (2015) Developing Corporate Natural Capital Accounts, Final Report for the Natural Capital Committee, January 2015.

<sup>3</sup> See: <http://www.thecrownestate.co.uk/our-business/how-we-measure-value/>

capital assets to ensure that the value of the benefits provided by those assets continue into the future.

To develop the pilot account The Crown Estate worked with eftec and its partners to compile the underpinning financial and environmental management information for the Windsor Estate. This drew on previous research for The Crown Estate that applied GIS mapping and an external ecosystem service valuation model - from the UK National Ecosystem Assessment<sup>4</sup> - to assess provision of a selection ecosystem services and their associated market and non-market benefits. The benefits captured in the natural capital account include agricultural products, timber, biomass for energy, carbon sequestration, and recreation and amenity.

## **Results**

The pilot account reveals the significant net benefit that the Windsor Estate delivers to society. This is estimated to be approximately £4m per annum, aggregating to an asset value of almost £46m in present value terms over 100 years. In contrast, the long term management costs amount to just £7m over the same time period. The greatest contribution to the overall net asset value is from recreation benefits; a mix of private and external (non-market) value.

For The Crown Estate, the natural capital account provides an explicit demonstration of the wider value that is generated by Windsor Estate, showing the substantial positive contribution to society and supporting its continued long-term management to sustain these benefits.

## **Scalability/replicability**

Understanding and managing natural capital is an increasing concern for many businesses. The benefits of successfully managing natural capital are no different to good management of other types of capital. Put simply, it makes good business sense to understand the value of natural capital upon which an organisation relies and impacts.

The CNCA framework enables businesses and landowners to account for natural capital, documenting assets and liabilities in a balance sheet format that extends traditional financial reporting. By understanding how a business makes use of natural capital assets, decisions can be taken to better manage them, with potential benefits to both the business and society.

The Crown Estate is exploring further application of CNCA across its portfolio. The framework can provide information that could be useful in several ways:

- Communicating the *total* contribution of its assets;
- Contributing to budgetary discussion and allocation of resources across the organisation by taking better account of the (social *and* financial) returns to budget; and
- Assessing performance, engaging staff in different parts of the organisation, from site managers to centralised staff responsible for budgets and priority setting.

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<sup>4</sup> See: Bateman et al. (2013) Bringing Ecosystem Services into Economic Decision-Making: Land Use in the United Kingdom, *Science*, 341, 45.

## EXAMPLE 2: CROWN ESTATE SCOTLAND

### Trial of the Natural Capital Protocol for land-based businesses

Paul Silcock, Cumulus Consultants

Cumulus Consultants, in partnership with AECOM, was delighted to be asked by Crown Estate Scotland and partners to explore the degree to which the Natural Capital Protocol is applicable and useful to land-based businesses in Scotland.

The Natural Capital Protocol, produced by the Natural Capital Coalition, is a standardised international framework for businesses to identify, measure and value their impacts and dependencies on natural capital.

#### Process

During the six-month project, we tailored the Protocol to the land-based sector, trialled it with three land-based businesses – a lowland mixed farm, an upland cattle and sheep farm and an upland mixed estate (the 23,350ha Glenlivet Estate in the Cairngorms) – analysed the feedback and made recommendations.

#### The project outputs

- Overview Report
- Natural capital assessments and case studies for three businesses
- Summary guide for land-based businesses and their advisers
- Presentation to accompany the summary guide

#### Key findings

- The Protocol can be applied to all types of land-based business although it is more challenging for a whole estate than an individual farm or specific project.
- The Protocol is useful for improving understanding of natural capital and ecosystem services, business dependencies and impacts, inter-dependencies between enterprises, risks and opportunities, and wider societal benefits.
- The Protocol should enable land managers to improve economic and environmental performance and resilience.
- The Protocol has potential to help land-based businesses across Scotland and the UK by:
  - Assessing change over time and informing actions for business
  - Informing decisions on significant projects or land use change.

#### What others say

*The trial has been really useful in helping to increase my awareness of how our business may impact natural environment. It'll help us to make more informed decisions about how to improve our farming operations going forward, both in economic and environmental terms.*

Jim Simmons, Tenant Farmer

*The farms involved in the trial have already been long involved in taking a sustainable approach to land management, including riparian and hedgerow planting, soil improvement and wildflower management. Even with those good practices in place, they still found the Protocol really helpful in planning the long-term potential of their land.*

Andrew Wells, Crown Estate Scotland



### **Key recommendations**

- Progress the business report actions
- Introduce natural capital metrics (e.g. soil health and biodiversity)
- Roll-out the Protocol more widely with:
  - Templates
  - Guidance
  - Case studies
  - Tool to streamline process
- Communicate the benefits

### **Key Benefits**

- First trial of the Natural Capital Protocol with land-based businesses
- Provided natural capital assessments and actions for three businesses
- Demonstrated how the Protocol can work alongside existing business planning tools and schemes
- Contributed to future policy thinking around land management and natural capital

### **Weblink**

The project reports and other outputs, together with feedback from partners and participating businesses, can be accessed [here](#)

### Example 3: LAND MANAGEMENT BY A WATER UTILITY

#### Natural Capital Accounting (NCA) and Ecosystem Services Assessment in the water sector

Jonathan Dobson, United Utilities

The water sector relies on natural assets to provide the right amount and quality of water for treatment, and to receive treated effluent. The sector protects natural assets through treatment of wastewater, attenuation of flow (storage of water) and support for appropriate land management. The sector also impacts on natural assets through the supply chain (e.g. energy, chemicals) and operations (e.g. pollution prevention, waste management).

In 2005 United Utilities started the widely-known Sustainable Catchment Management Programme (SCaMP). SCaMP aimed to improve land management to enhance the condition of Sites of Special Scientific Interest in the company’s land-holdings, while also enhancing carbon sequestration and reducing dissolved organic carbon in run-off. SCaMP helped to provide holistic management plans for all United Utilities’ agricultural land holdings, providing tenant farmers with business plans that were viable and productive. Cost Benefit Analysis following SCaMP1 indicated a benefit:cost ratio of 2.275 (the greatest benefit arising from carbon sequestration).

Several water utilities have attempted to use NCA and ESA for different purposes over the past few years. United Utilities has used them for triple bottom line accounting and catchment natural capital accounting, Yorkshire Water for total contribution and project accounts, and several companies have used them for cost benefit analysis of catchment management in uplands or elsewhere. This has led to collaboration with the Natural Capital Committee, Accounting for Sustainability and others.

Stimulated by the water industry, UKWIR in 2015 commissioned [a study](#) to consider the opportunities and barriers to the broader introduction of NCA and/or ESA into water company business planning. The objectives were: (1) to undertake a review of current NCA and ESA initiatives that are relevant to, or could benefit the water industry; (2) to describe the potential benefits and implications of NCA and/or ESA for water companies; (3) to identify opportunities, barriers and risks for integration of NCA and ESA into both the regulatory framework and water company planning and decision-making; (4) to develop proposals for research to fill knowledge gaps. Initial findings are summarised in the table below:

<p><b>Understanding:</b>          General not specific          Limited to specialist teams          Relatively recent          More evolved in GHGs</p>	<p><b>Benefits:</b>          Risk management          Better CBA will result in better decisions          Opportunities for collaboration          Comprehensive assessments of wider contribution</p>
<p><b>Barriers:</b>          Complex and evolving ideas          Difficult to demonstrate direct impact on some capital          Unintended bias          No standards          Asset centric solution mindset</p>	<p><b>Gaps:</b>          Absence of clear business case          Costs and risks of doing it          Regulatory leadership          Data          Impacts and assets outside of management control</p>

The project subsequently worked to develop a **flexible framework**, building on NCA and ESA techniques, with embedded decision support that allows the user (water company or strategic advisor) to assess the needs for and benefits of adopting the approaches – rather similar to a [Natural Capital Protocol sector guide](#). The collection of information, evidence and best practice guidance aimed to provide companies with comprehensive support in delivering these approaches, but importantly with the flexibility to deliver them in the way and to the timescale that best suits individual companies' situations.

The study identified other areas for further research including: (1) development of **tools and techniques** that make it easier for individuals or teams within water companies to undertake NCA and ESA; (2) identifying what types of **data** are required for NCA and ESA, whether they exist in the correct format, and if they are collected in a consistent manner across the industry; (3) working with stakeholders to establish the **political and regulatory framework** to enable such initiatives; (4) demonstrating how the approaches might work across the industry through relevant **pilots and case studies**.

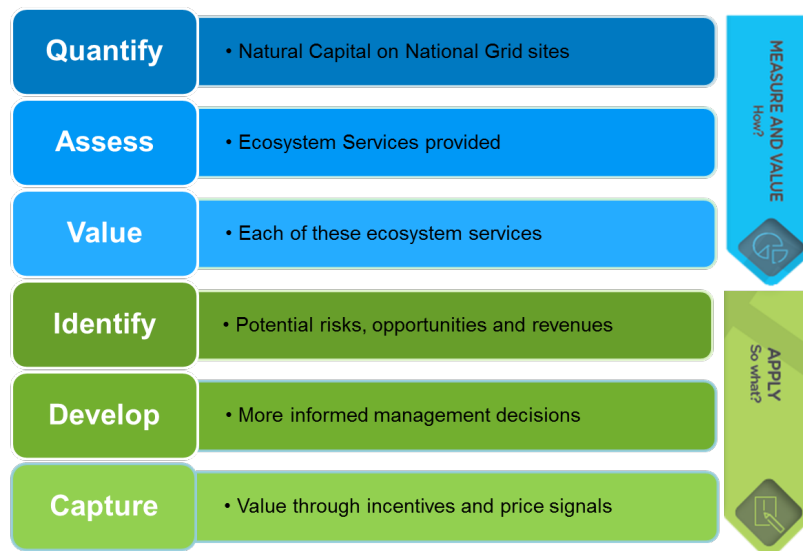
## Example 4: LAND MANAGEMENT BY AN INFRASTRUCTURE COMPANY

### National Grid's Natural Capital Valuation Tool

Chris Plester, National Grid

National Grid developed, with AECOM, a Natural Capital Valuation Tool that helps focus its approach to proactive management of non-operational estate, as a key element of the company's sustainability strategy. The tool helps recognise and account for the value that NG's natural assets provide and manage them in a way that delivers greatest value to NG, its neighbours and stakeholders.

The tool is based around the identification, quantification and valuation of 10 broad habitat types and 12 ecosystem services. It uses data from over 100 external sources to assign indicative monetary values to these services. These values provide NG with a better understanding of which habitats deliver greatest benefit and to whom.



#### Overview of National Grid's natural capital valuation process

NG uses 'scenario analysis' to develop a series of management options and potential ecosystem service benefits (expressed in monetary terms) for each site. Financial values are derived from many valuation approaches for example, payments for ecosystem service schemes as well as biodiversity and carbon 'offsetting' schemes. The benefits and returns delivered via the natural environment provide both private and public benefits to the business and to external stakeholders (e.g. local residents, farmers).

Natural capital accounting using the tool, captures the value of the ecosystem assets and allows NG to highlight potential to grow this value, whilst helping to quantify risk, and identify new opportunities for partnership and collaboration. The Natural capital values help to prioritise management approaches that target greatest need and opportunity, protecting and enhancing natural capital assets and the multiple benefits they provide.

Translation of the value of nature into a language that resonates with a range of functions across NG's business has built greater engagement with land managers, asset owners and finance teams and supports NG's strategic ambition to embed sustainability, particularly to integrate sustainability factors such as carbon and natural capital, into decision-making. This approach drives informed, long-term decision-making and targeted investment that optimises the natural capital value of NG's estate.